UCSF-CHESA

Critical Care Facility Assessment Tool

Start of Block: Section 1

Q4 Instructions to Assessment administrators:

This assessment should be completed with input from healthcare providers with current, firsthand knowledge of the facility’s intensive care and oxygen infrastructure.

The following providers are most likely to be able to answer the survey questions: Physician who staffs the ICU at this facility

Anesthesia provider

ICU nurse

Biomedical engineer

 Denotes a required answer

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| Page Break |  |

SECTION I - General Info

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Q9 Country (location of healthcare facility being surveyed):

Q10 City/town:

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Q11 Facility name:

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Q94 What are your facility's GPS coordinates?

* Latitude (1) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Longitude (2) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Q98 Respondent(s) name:

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Q13 Respondent(s) email:

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Q14 Which of the following terms best describe this facility? (Select all that apply)

* Designated COVID Treatment Center (1)
* Public /Government hospital (2)
* University-affiliated hospital (3)
* Private hospital (4)
* NGO, faith-based or charity hospital (5)
* Other (6) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Q15 Which of the following age ranges does this hospital serve:

* Neonate ( (1)
* Child (1 month to 14 years of age) (2)
* Adult (>14 years of age) (3)
* All of the above (4)

Q16 What language(s) are understood by healthcare staff:

* English (1)
* French (2)
* Spanish (3)
* Arabic (4)
* Portugese (5)
* Other (6) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Q17 Approximately how many intubations have been performed in this facility in the past 2 months?(Do not include operating theatre cases)

* 0 (1)
* 1-10 (2)
* 11-60 (3)
* >60 (4)

Q18 Approximately how many patients were placed on mechanical ventilators at this facility in the past 2 months?   
(Do not include operating theatre cases)

* 0 (1)
* 1-10 (2)
* 11-60 (3)
* >60 (4)

Q19 Can this facility provide emergent dialysis for intensive care patients?

* Yes (1)
* No (2)
* Unsure (3)

Q20 Does this facility accept transferred patients from other health facilities?

* Yes (1)
* No (2)
* Unsure (3)

Q21 Can this facility transfer patients to higher level care via an ambulance (that includes at least oxygen and pulse oximetry in the ambulance)?

* Yes (1)
* No (2)
* Unsure (3)

Q22 Is this facility actively trying to purchase or receive donations of additional ventilators?

* Yes (1)
* No (2)
* Unsure (3)

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Q23 With the facility’s current resources, approximately how many critically ill patients can this facility provide mechanical ventilation for at the same time?

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Q24 If this facility received more ventilators, then approximately how many additional critically ill patients could your facility safely provide mechanical ventilation for at the same time?

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Q25 Does the facility have a supply chain capable of procuring  consumables and accessories required for mechanical ventilators?

* Yes (1)
* No (2)
* Unsure (3)

Q26 Notes on General Info section:

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End of Block: Section 1

Start of Block: Section 2

Section II - Infrastructure & Equipment

Q28 Where does your facility provide care for critically ill patients who have been admitted?

* Intensive care unit (1)
* Post-operative recovery unit (2)
* Regular ward (3)
* High dependency unit (4)
* Other (5) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Q33 How many inpatient beds does this healthcare facility have?

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Q30 How many Intensive care unit (ICU) beds?

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Q31 How many high dependency unit (HDU) beds?

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Q32 How many operating theatres/rooms?

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Q34 Does your facility provide Internet access to healthcare workers?

* Yes (1)
* No (2)
* Unsure (3)

Q35 Does the facility have reliable piped water servicing all wards, which meet WHO Guidelines for Water Quality with a detectable chlorine residual?

* Yes (1)
* No (2)
* Unsure (3)

Q27 In this facility, what percent of the time are the following available & functioning for provision of intensive care:

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| --- | --- | --- | --- | --- |
|  | % of the time available & functioning for intensive care | | | |
|  | 0% (1) | 1-50% (2) | 50-99% (3) | 100% (4) |
| Oxygen (1) |  |  |  |  |
| Electricity 220-240v (2) |  |  |  |  |
| Electricity 100-120v (9) |  |  |  |  |
| Electricity from the public grid (4) |  |  |  |  |
| Voltage stabilizers (5) |  |  |  |  |
| Surge suppressors/protectors (6) |  |  |  |  |
| Backup power supply (7) |  |  |  |  |
| Portable suction units (8) |  |  |  |  |
| Pipeline suction/vacuum system (10) |  |  |  |  |
| Sterile processing (e.g. autoclaves) (11) |  |  |  |  |

Q36 Monitoring Equipment

Q1 In this facility, what percent of the time are the following available & functioning\* for provision of intensive care:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | % of the time available & functioning for intensive care | | | | Quantity |
|  | 0% (1) | 1-50% (2) | 50-99% (3) | 100% (4) | # (1) |
| Continuous pulse oximeter (with adult probes) (1) |  |  |  |  |  |
| Continuous pulse oximeter (with pediatric and neonatal probes) (2) |  |  |  |  |  |
| Colorimetric CO2 detection device (3) |  |  |  |  |  |
| Continuous waveform or numerical capnography (4) |  |  |  |  |  |
| Continuous ECG/EKG (6) |  |  |  |  |  |
| Thermometer (7) |  |  |  |  |  |
| Adult non invasive blood pressure measurement (manual or automated) with cuffs (8) |  |  |  |  |  |
| Peds non invasive blood pressure measurement (manual or automated) with cuffs (9) |  |  |  |  |  |
| Invasive blood pressure measurement (10) |  |  |  |  |  |
| Defibrillator (11) |  |  |  |  |  |

Q37 Airway and Miscellaneous Equipment

Q38 In this facility, what percent of the time are the following available & functioning\* for provision of intensive care:

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| --- | --- | --- | --- | --- |
|  | % of the time available & functioning for intensive care | | | |
|  | 0% (1) | 1-50% (2) | 50-99% (3) | 100% (4) |
| Adult oral or nasopharyngeal airways (1) |  |  |  |  |
| Pediatric oral or nasopharyngeal airways (2) |  |  |  |  |
| Adult Laryngoscopes (3) |  |  |  |  |
| Adult endotracheal tubes (4) |  |  |  |  |
| Pediatric Laryngoscopes (15) |  |  |  |  |
| Pediatric endotracheal tubes (5) |  |  |  |  |
| Endotracheal tube introducer, bougie and stylet (6) |  |  |  |  |
| Video laryngoscopy (7) |  |  |  |  |
| Adult intravenous or intraosseous catheters (8) |  |  |  |  |
| Peds intravenous or intraosseous catheters (9) |  |  |  |  |
| Adult intravenous or intraosseous infusion tubing (10) |  |  |  |  |
| Peds intravenous or intraosseous infusion tubing (11) |  |  |  |  |
| Infusion pumps (12) |  |  |  |  |
| Central venous catheters (13) |  |  |  |  |
| Chest tubes (14) |  |  |  |  |
| Crash cart (16) |  |  |  |  |
| Orogastric or nasogastric feeding tubes (17) |  |  |  |  |

Q40 Diagnostics

Q41 In this facility, what percent of the time are the following available & functioning\* for provision of intensive care:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | % of the time available & functioning for intensive care | | | |
|  | 0% (1) | 1-50% (2) | 50-99% (3) | 100% (4) |
| Radiology, including portable chest x-ray (1) |  |  |  |  |
| Point of care ultrasound (2) |  |  |  |  |
| Clinical chemistry labs (3) |  |  |  |  |
| Clinical hematology labs (4) |  |  |  |  |
| Microbiology labs (e.g. urine, blood and sputum/bronchial gram stain and culture) (5) |  |  |  |  |
| Arterial blood gas (6) |  |  |  |  |
| COVID testing (PCR) (7) |  |  |  |  |

Q42 Oxygen Delivery Equipment

Q43 In this facility, what percent of the time are the following available & functioning\* for provision of intensive care:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | % of the time available & functioning for intensive care | | | | Quantity |
|  | 0% (1) | 1-50% (2) | 50-99% (3) | 100% (4) | # (1) |
| Adult non-invasive mechanical ventilators (CPAP or BiPAP) (1) |  |  |  |  |  |
| Pediatric CPAP or Bubble CPAP (2) |  |  |  |  |  |
| Oxygen blender/mixer (3) |  |  |  |  |  |
| \*Mechanical ventilators (capable of volume control ventilation) (4) |  |  |  |  |  |
| Anesthesia machines with functional ventilators (5) |  |  |  |  |  |
| Flow-spitter, for oxygen supply (6) |  |  |  |  |  |
| Oxygen flowmeter (aka Thorpe tube) (7) |  |  |  |  |  |
| Adult High flow nasal cannula (delivery device and patient circuit, capable of >20 liters per minute) (8) |  |  |  |  |  |
| Pediatric High flow nasal cannula (delivery device and patient circuit, capable of >20 liters per minute) (9) |  |  |  |  |  |
| Adult Low flow nasal cannula/prongs (10) |  |  |  |  |  |
| Pediatric Low flow nasal cannula/prongs (11) |  |  |  |  |  |
| 6 or 8 FG nasopharyngeal catheter (~40cm) (12) |  |  |  |  |  |
| Nasal catheter (13) |  |  |  |  |  |
| Adult Face masks (14) |  |  |  |  |  |
| Pediatric Face masks (15) |  |  |  |  |  |
| Adult Face masks with reservoir bags (16) |  |  |  |  |  |
| Pediatric Face masks with reservoir bags (17) |  |  |  |  |  |
| Venturi masks (18) |  |  |  |  |  |
| \*Viral filters for invasive & non-invasive ventilators (19) |  |  |  |  |  |
| Sterile or distilled water (20) |  |  |  |  |  |
| Adult ventilator patient circuits (21) |  |  |  |  |  |
| Pediatric ventilator patient circuits (22) |  |  |  |  |  |
| Humidity conservation filter (Heat and Moisture exchange filter) (23) |  |  |  |  |  |
| Oxygen heat and humidification system (24) |  |  |  |  |  |
| Adult In-line suction equipment (for intubated patients) (25) |  |  |  |  |  |
| Peds In-line suction equipment (for intubated patients) (26) |  |  |  |  |  |
| Yankauer sucker (27) |  |  |  |  |  |
| Adult self-inflating bags (28) |  |  |  |  |  |
| Pediatric self-inflating bags (29) |  |  |  |  |  |
| Tubing for oxygen delivery (30) |  |  |  |  |  |

Q44 Oxygen Supply

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Q45 How many portable oxygen concentrators ~5 LPM capacity?

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Q46 How many portable oxygen concentrators ~10 LPM capacity?

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Q47 How many portable oxygen concentrators 4bar/50psi capable?

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Q48   
Which of these oxygen sources are available at your facility? (Select all that apply)  
  
   
\*PSA= Pressure Swing Adsorption; VSA= Vacuum Swing Adsorption

* Oxygen cylinders (1)
* Oxygen generating plant on site (PSA\* or VSA\*), supplied to hospital via cylinders (2)
* Oxygen generating plant on site (PSA\* or VSA\*), supplied to hospital via pipes (3)
* Liquid oxygen (vacuum insulated evaporator), supplied to hospital via pipes (4)
* Other (5) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* None (6)

Q49 What is the primary source of oxygen used to deliver oxygen to the intensive care unit? (Select one)  
   
\*PSA= Pressure Swing Adsorption; VSA=Vacuum Swing Adsorption 

* Oxygen cylinders (1)
* Oxygen generating plant on site (PSA\* or VSA\*), supplied to hospital via cylinders (2)
* Oxygen generating plant on site (PSA\* or VSA\*), supplied to hospital via pipes (3)
* Portable oxygen concentrators (PSA\* with max capacity of 5-10LPM) (4)
* Portable oxygen concentrators capable of delivering ~4bar/50psi (5)
* Liquid oxygen (vacuum insulated evaporator), supplied to hospital via pipes (6)
* Other (7) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* None (8)

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Q50 How many oxygen cylinders >6000L capacity (~1.5 meter height)?

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Q52 What is the maximum amount of oxygen in liters per day that your facility can supply?

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Q53 Have you confirmed your oxygen supply has a fraction of oxygen content > 80%?

* Yes (4)
* No (5)

Q56 In this facility, what percent of the time are the following available & functioning\* for the provision of intensive care:

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| --- | --- | --- | --- | --- |
|  | % of the time available & functioning for intensive care | | | |
|  | 0% (1) | 1-50% (2) | 50-99% (3) | 100% (4) |
| Compressed medical air (1) |  |  |  |  |
| Oxygen concentration analyzer (2) |  |  |  |  |
| Pressurized oxygen at ~4bar/50psi (3) |  |  |  |  |
| Back-up power at the oxygen generating plant (4) |  |  |  |  |

Q57 What are the barriers to increasing your facility's capacity for administering oxygen to patients? (Select all that apply)

* Delivery devices (e.g. nasal cannulas, facemasks, ventilators) (1)
* Power (2)
* Storage (e.g. tanks and cylinders) (3)
* Oxygen generator capacity (10)
* Healthcare worker staffing (4)
* Engineering (5)
* Policy (6)
* Other (7) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Q58 Does your facility have an identified supplier of oxygen?

* Yes (1)
* No (2)
* Unsure (3)

Q59 What type of connector do you commonly use for connecting ventilators to oxygen sources?    
    
(Select images)

* Diameter Index Safety System (DISS) (1)
* Ohio Quick-connect system (OQC) (2)
* Pin Index Safety System (PISS) (3)
* Quick connect (schrader) system used in UK (4)
* Non-interchangeable screw threaded (NIST) (5)
* G5/8 connector (commonly referred to as 'Bull Nose' connection) (6)
* Nipple nut and stem 'Christmas Tree' (7)
* Other (8) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Q60 Notes on Infrastructure and Equipment section:

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End of Block: Section 2

Start of Block: Section 3

SECTION III- Infection Prevention & Control

Q63 In your facility, where are patients with diagnosed or suspected COVID-19 cared for (or planned to be cared for):    
  
  
(Select all that apply)

* ICU/HDU for COVID-19 only (1)
* ICU/HDU mixed with COVID-19 and non COVID-19 patients (2)
* Shared rooms or open wards for COVID-19 patients only (3)
* Shared rooms or open wards for COVID-19 and non COVID-19 patients (4)
* Private rooms on ward for COVID-19 only (5)
* Private rooms on ward for COVID-19 and non COVID-19 patients (6)
* Negative pressure rooms (i.e. ≥ 12 air changes per hour) (7)

Q64 Is there a designated triage station or separate screening tent at the facility entrance to identify potential COVID-19 patients?

* Yes (1)
* No (2)
* Unsure (3)

Q65 Is there a designated area for immediate isolation of patients presenting to the hospital with suspected COVID-19?

* Yes (1)
* No (2)
* Unsure (3)

Q66 Which of the following types of Personal Protective Equipment (PPE) are available for intensive care in this facility? (Select all that apply)

* Surgical/medical mask - healthcare worker (type II) (1)
* Surgical/medical mask - patient (type I) (2)
* N95 or KN95 or KF94 or FFP2 respirator masks (3)
* Powered air purifying respirator (PAPR) (4)
* Face shields or goggles (5)
* Disposable non sterile examination gloves (6)
* Disposable sterile gloves (7)
* Disposable gowns (8)
* Reusable fluid resistant gowns (9)
* Gumboots (10)

Q67 Are there protocols for reuse or resterilization of any the following protective personal equipment (PPE) at your facility? (Select all that apply)

* Surgical/medical mask - healthcare worker (type II) (1)
* Surgical/medical mask - patient (type I) (2)
* N95 or KN95 or KF94 or FFP2 respirator masks (3)
* Powered air purifying respirator (PAPR) (4)
* Face shields or goggles (5)
* Disposable non sterile examination gloves (6)
* Disposable sterile gloves (7)
* Disposable gowns (8)
* Reusable fluid resistant gowns (9)
* Gumboots (10)

Q68 Have all staff in your facility received training on how to put on, remove, and dispose of PPE?

* Yes (1)
* No (2)
* Unsure (3)

Q69 Have all staff in your facility received fit testing for N95 or comparable respirator masks?

* Yes (1)
* No (2)
* Unsure (3)

Q70 Which of the following agents are available at this facility for environmental surface disinfection?

* Quaternary ammonium compounds (1)
* Alcohol (ethyl or isopropyl) (2)
* Chlorine-releasing agents (e.g. bleach, sodium, or calcium hypochlorite) (3)
* Improved hydrogen peroxide (4)

Q71 Which of the following agents are readily available for hand hygiene?

* Soap and water (1)
* Alcohol based hand rub (2)

Q72 Are environmental cleaning protocols available?

* Yes (1)
* No (2)
* Unsure (3)

Q73 Notes on Infection Prevention & Control section:

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End of Block: Section 3

Start of Block: Section 4

Section IV- Medications

Q75 In this facility, what percent of the time are the following available for the provision of intensive care:

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| --- | --- | --- | --- | --- |
|  | % of the time available & functioning for intensive care | | | |
|  | 0% (1) | 1-50% (2) | 50-99% (3) | 100% (4) |
| Succinylcholine/Suxamethonium (1) |  |  |  |  |
| Any of the following non-depolarizing muscle relaxants: rocuronium, vecuronium, cisatracurium, pancuronium, or atracurium) (2) |  |  |  |  |
| Dopamine (3) |  |  |  |  |
| Epinephrine/Adrenaline (4) |  |  |  |  |
| Norepinephrine/Noradrenaline (5) |  |  |  |  |
| Atropine (6) |  |  |  |  |
| Calcium Chloride (7) |  |  |  |  |
| Amiodarone (8) |  |  |  |  |
| Furosemide (9) |  |  |  |  |
| Sodium bicarbonate (10) |  |  |  |  |
| Propofol (11) |  |  |  |  |
| Diazepam, Lorazepam, or Midozolam (12) |  |  |  |  |
| Etomidate (13) |  |  |  |  |
| Thiopental (14) |  |  |  |  |
| Heparin or low molecular weight heparin (15) |  |  |  |  |
| Intravenous Antibiotics (16) |  |  |  |  |
| Antacids (17) |  |  |  |  |
| Intravenous fluids (e.g. Normal saline, lactated ringers) (18) |  |  |  |  |
| Fentanyl or morphine (19) |  |  |  |  |
| Ketamine (20) |  |  |  |  |
| Dextrose 50% and Insulin (21) |  |  |  |  |

Q76 Notes on Medications section:

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End of Block: Section 4

Start of Block: Section 5

Section V- Human Resources

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Q78 How many physicians with intensive care medicine certification are employed full time at your facility?

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Q79 How often is a physician trained in the management of mechanically ventilated patients available at your facility?

* 0% (1)
* 1-50% (2)
* 50-99% (3)
* 100% (4)

Q80 How often is a trained provider available for emergency intubation, either in-hospital or on-call from home?

* 0% (1)
* 1-50% (2)
* 50-99% (3)
* 100% (4)

Q81 Which type of healthcare provider(s) available most often intubates critically-ill patients in your facility?

* Physician specialist in anesthesia (4)
* Physician specialist in Intensive Care (5)
* Non-physician anesthesia provider (e.g. nurse anesthetist) (6)
* Other physician (7) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Other, non-physician provider (8) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Q82 What proportion of nurses in the intensive care unit (ICU) have completed a certified training program in intensive care nursing?

* 0% (1)
* 1-50% (2)
* 50-99% (3)
* 100% (4)

Q83 On average, what is the approximate nursing provider to patient ratio in the ICU? (1:1 = 1 nurse per 1 patient)

* 1:1 (1)
* 1:2 (2)
* 1:3 (3)
* 1:4 (4)
* 1:5 (5)
* >1:5 (6)

Q84 Does this facility have protocols for ventilator management?

* Yes (1)
* No (2)
* Unsure (3)

Q85 How often does this facility have a biomedical engineer/technician capable or servicing equipment including mechanical ventilators and patient monitors?

* 0% (1)
* 1-50% (2)
* 50-99% (3)
* 100% (4)

Q86 How often are the following provider types available at this facility, and how many providers are employed?   
  
  
(Count both full-time and part-time)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | % time provider is available at facility | | | | Number of providers |
|  | 0% (1) | 1-50% (2) | 50-99% (3) | 100% (4) | # (1) |
| Physician specialist in anesthesia (1) |  |  |  |  |  |
| Physician specialist in Intensive Care (2) |  |  |  |  |  |
| Physician specialist in Internal Medicine (3) |  |  |  |  |  |
| Physician specialist in Pediatrics (4) |  |  |  |  |  |
| Physician specialist in Surgery (e.g. surgeons) (5) |  |  |  |  |  |
| Physician specialist in Emergency Medicine (6) |  |  |  |  |  |
| Non-physician anesthesia provider (e.g. nurse anesthetist) (7) |  |  |  |  |  |
| Nurse (8) |  |  |  |  |  |
| Respiratory therapist (9) |  |  |  |  |  |
| Pharmacist (10) |  |  |  |  |  |
| Lab tech (11) |  |  |  |  |  |
| Nutritionist (12) |  |  |  |  |  |
| Rehab therapist (13) |  |  |  |  |  |
| Radiologist (14) |  |  |  |  |  |

Q87 Notes on Human Resources section:

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End of Block: Section 5

Start of Block: Section 6

Section VI- Other

Q90 Are there any other challenges with equipment, monitors, workforce or other factors that are limiting intensive care capacity in your facility? If so, please comment.

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Q91 What resources are most needed to improve your facility's ability to manage COVID-19 patients safely?

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Q92 Based on the facility's current human resources and infrastructure, what equipment for oxygen therapy would be most useful to expand care to COVID-19 patients?

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End of Block: Section 6